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CONTENTS.

	Page.
EDITORIAL NOTES	97
OUR HOME LETTER	98
EXTRACTS:—Acetylene; Purple Tones on P. O. P.; Portraiture; Retouching	99
COMPETITIONS, &c.	108

EDITORIAL NOTES.

THIS seems to be the dull season for photographic news if one is to judge by the various photographic journals that reach us. In this country, of course, the hot weather accounts for the lethargy which apparently is not confined to our own Society, while at Home it is the holiday time and amateurs are more interested in accumulating negatives than in discussing photographic questions.

IN our Home Letter will be found an account of the method of using kachin in a combined developing and fixing bath; but other developers besides kachin can be so employed. Here Liesegang, writing in the *Camera Obscura* gives an account of his experiments in this direction with amidol which have given good results. The following is the bath which he recommends:—

Sodium hydrosulphite	31 parts.
Water	150 parts.

This is mixed with

Silver nitrate	3 parts.
Water	100 „

The precipitate first formed dissolves readily on shaking, and when this has taken place add to the solution:—

Amidol	1 part.
Sodium sulphite	5 parts.

When this is dissolved add a ten per cent. solution of caustic potash till the solution becomes slightly greenish—about 25 parts will be required for this. This bath is suitable for the development and intensification of dry plates.

FOR those who wish to use photography for decorative purposes a simple sensitiser that can be used on various materials is often desired. The following, recommended by M. Niewenglowski, is taken from the *British Journal of Photography*. It may be applied to almost any material without previous preparation if it be fairly well sized:—

Distilled water	10 parts.
Silver nitrate	3 „
Uranium nitrate	30 „
Absolute alcohol to	100 „

Apply the solution with a brush and allow it to dry in the dark, which takes about ten minutes. Expose in contact with the negative, and fix by immersion in two or three baths of water acidulated with nitric acid, and then rinse in plain water and dry. It is advisable, if very rich tones are required, to dry in front of the fire, or iron with a hot flat iron.

THE August *Photogram* contains the first part of an interesting account of the photographic work at Harvard College Observatory. The first stellar photograph was taken so long ago as 1850 and showed only one star while modern photographs may show many thousands. Perhaps the chief characteristic of the Harvard photographic equipment is the series of automatic instruments, by which the necessary human supervision is reduced to a minimum. Five instruments are in use every clear night, while on occasions of special interest many more can be employed.

ONE of the first of the automatic instruments was a camera pointing to the pole with the object of obtaining a photogragh of the pole star whenever it was unobscured by clouds and thus giving a record of the clearness of the sky during the night similar to the record given by a sunshine recorder during the day. Definite intervals of time were marked by means of a shutter worked automatically by a clock, and an arrangement resembling an alarm clock closed the shutter just before the light of the approaching day would have fogged the plate. The small instrument originally used has been replaced by a 15-inch reflector, since it has been found that much more information than that given as to the clearness of the sky can be obtained from a careful measurement of the photographs thus obtained.

ANOTHER of the automatic instruments is used for studying variable stars of the type which shows large variation in the light during a short space of time. A number of photographs with an exposure of 10 seconds each are taken on the same plate at definite intervals of time. Usually a plate receives about 120 photographs at intervals of one minute, and at the end of two hours a new plate is inserted. Since the photographs are all taken with the same length of exposure, the size of the photographic image (or its density) gives a measure of the brightness of the star. This instrument has also been used for photographing eclipses of Jupiter's satellites.

THE "Transit Photometer," one of the newest, is also the most remarkable of these instruments. Three times an hour it sweeps from the southern to the northern horizon, passing through the zenith, by a series of steps each of two seconds duration, and then swings back again to be ready for a fresh sweep. The plates are changed every three hours. By this means all stars visible to the naked eye passing the meridian during the night can be photographed.

THESE are only a few of the instruments used at Harvard College Observatory and at the branch Observatory at Arequippa. Other instruments are used for making regular periodic surveys of the heaven by photographing both the stars and their spectra and for many other purposes. The accumulation of photographic plates at the Observatory is so great that a special fire-proof building has been erected for storing them. The value of this collection of negatives to astronomy can hardly be over estimated and scarcely a month passes in which astronomers have no reason to be grateful to Professor Pickering for the skill and energy which he has shown in developing this branch of astronomy.

OUR HOME LETTER.

July, 1899.

So many new photographic substances have been put upon the market lately that for once I cannot do better than devote the whole of my space to describing the most important.

And first let me say I believe the all-absorbing film question has at last been solved. Although for some time the celluloid film has attempted to usurp the glass film, the latter (plates as they are more familiarly termed) has held the day. For this there has been one important reason, the price. Celluloid films, although possessing many material advantages over plates, especially under certain circumstances, have hitherto been sold at a price varying from 25 to 50 % more than the latter, and for this reason, if for no other, their use has been restricted to a few. But now Messrs. Wellington & Ward, the well-known

makers of bromide paper, are prepared to supply a special film, superior in certain respects to the celluloid film, and costing only 10 °/₀ more than the glass plate. These films are not inflammable as celluloid is, they are sent out on a stout paper support from which after exposure and development the film proper is stripped, its constitution is then simply gelatine, impregnated of course with the silver image. I have handled these films, and found them tough enough to resist reasonable usage, while the image to be obtained is everything one could desire. But a further point of superiority which will commend itself at once to all practical photographers is that these films can be printed upon from either side without any difference in the quality of the print being perceptible. What a splendid thing this will be for carbon printers!

The next thing to which I will call attention is a new developer, possessing the extraordinary power when used in conjunction with sodium hyposulphite of developing and fixing simultaneously. Kachin, as it is called, has, however, sundry distinctive qualities apart from this unusual characteristic. It is readily soluble, and has no staining action upon the fingers or the film, as a natural sequence a solution may be used over and over again, a decided advantage from an economical point of view. Kachin admits of great latitude by different degrees of dilution, strong density or extreme softness being obtained without difficulty. I might mention also that as a developer for bromide paper it answers admirably. But probably photographers will be most interested in the singular properties which kachin possesses of developing a plate in the presence of sufficient hypo to fix it, and I venture, therefore, especially as I rarely inflict chemical details on my readers, to give the formula for this special procedure:—

For simultaneous developing and fixing—

30 grms: of sulphite soda cryst:
75 c.c. of water.
7 grms: of caustic soda, pruif: in sticks.
7 „ of kachin.

take just before use:—

12 c.c. of above developer.
20 c.c. of hypo solution 1 to 5.
30 c.c. of water.

Let me point out also that for a remedy for over exposure this particular method of development is worthy attention, for plates to which several times the normal exposure has been given can be made to develop into clear, brilliant negatives of proper quality and density. The plates are simply left in the solution until completely fixed, when a perfectly developed negative of correct density will be found to have resulted. It must not be forgotten, however, that in the case of combined fixing and developing, the solution should not be employed more than twice. Another point also which may be an additional inducement to the adoption of this developer is that development may be completed after the plate has been sufficiently long in the solution for the image to be plainly seen by gas light, or even subdued daylight.

It is frequently said that the photographers work has become more simplified during the last few years, but the statement has never been more truly uttered than just at present. The necessary apparatus can be had in a portable form, the materials in a concentrated state, and of such a nature that all uncleanliness is avoided, so that no one need be hindered from taking up photography on the excuse that a separate laboratory is not available. With a cupboard of modest capacity for storing the necessaries, one can perform the manipulations of development and printing in a drawing room if no other suitable apartment is available.

PERCY LUND.

EXTRACTS.

Acetylene.

By Professor VIVIAN B. LEWIS.

(Continued from page 95.)

Since that time very great alterations have been made in the method of making calcic carbide. It is manifest that acetylene and the possibilities of using it are entirely dependent upon calcic carbide, and on the Continent, especially, enormous strides have been made in the manufacture. When it was first made by Wilzson and Moissan, the amount of electricity necessary to make a pound of carbide was extremely high, but it has been gradually and steadily reduced by improved methods until at the present time it may be said, roughly, that an electrical horse-power will make a ton of carbide in a year. At this moment there are practically two distinct modifications of the method of making calcic carbide in the electric furnace. In the first place, there is the process employed in England and America, and which may be termed the ingot process. Here I would refer you to a diagram of Wilson's "Niagara" furnace, in which there is a heavy rod carrying a metallic clutch which holds a block of carbon 16 inches square; this block of carbon can be brought down to the bottom of a truck which is run into the furnace beneath it; the bottom of the truck is made of cast iron, and there is a layer of carbon made by heating tar and coke together, and by bringing the upper carbon down in contact with the plate you can strike an arc between the carbon and the bottom plate; as soon as the arc is struck a mixture of lime and coke is fed into the bottom of the truck, and as the arc plays upon it, the carbide is formed. As the action goes on the rod is gradually raised, and the arc comes from the lump of carbide which has already been formed to the pole, and the result is that you build up between the pole and the bottom plate an ingot of carbide which may weigh about a ton. One of the great points about making the carbide in that way is that the heat which the arc is giving off, and which amounts to 3500° Cent, is conserved and kept in by the material surrounding the arc and which surrounds the ingot formed; there is practically no wear and tear on the crucible, and for that reason it is a fairly economic process and one which holds its own very well both in America and in England. On the Continent the carbide is made by a different method. When Moissan made his discovery, and when Willson's results were first published, there was already

working at Froges, in France, a manufactory for making aluminium by the Herault furnace, consisting of a cast-iron box lined with a mass of retort carbon, and into the centre of the crucible a big positive electrode was lowered from above in much the same way as in the Niagara furnace. On placing in this a mixture of lime and carbon the whole mass fuses down, the heat is so great that the entire mass becomes liquid; and from time to time a tapping hole can be opened by taking out a fire-clay plug, and the fused carbide can be run out into a vessel placed there to collect it. This method has advantages and disadvantages. For instance, in making carbide by this process, you get away from what is a real trouble in the ingot process, where there is naturally a quantity of crust all round the true carbide, and it is commercially impossible to send pure ingot carbide on the market by itself. The result is that occasionally you get a specimen of calcic carbide which does not by any means do its duty; instead of giving the normal 5 cubic feet per pound of carbide, you will occasionally get samples which will only give 3½ cubic feet, and this is owing to the difficulty of properly blending the ingot and the crust. This difficulty does not exist with the running process, in which there is no crust, but the cost of manufacture is rather greater, because the sides of the carbon crucible, and the carbon of the crucible itself, get used up very quickly. Moreover, the running process is rather more wasteful in electromotive force; and the result is that when you come to balance up there is really very little between the two methods. At the present moment, however, arrangements are being made for turning out something like 30,000 tons of carbide annually by the running process.

In this way it is that calcic carbide is made, and when finished this truly remarkable semi-metallic body has a density of 2·2, a colour very much resembling that of pig-iron, and occasionally has a very fine crystalline surface. Many of us have got into the way of thinking that if the carbide has a very fine crystalline surface that is a proof of its being perfectly pure; and that carbide with an extremely fine fracture, which looks like grey pig-iron, is not so pure. That is a mistake. Whether the carbide shows a fine crystalline surface or is like pig-iron is purely dependent upon the way it has been cooled. If made by the ingot process, the centre of the mass remains liquid and hot for a very long time, and, like every other process of crystallisation that goes on slowly, gives big crystals, so that from the middle of the ingot-made carbide you get the crystalline structure. On the other hand, by the running process, you find that owing to the rapid cooling there is a white surface with hardly any apparent crystalline form, and that is simply due to the rapidity of cooling; and such carbide will often give results quite as good or better than the other.

Having got the calcic carbide, one has to take certain precautions with it. The carbide industry in this country is hedged round by a large number of precautions; many people who use carbide and who make acetylene look upon them as unnecessary and vexatious, but until one has got more into the way of storing and keeping carbide, and of making and using acetylene, these regulations ought not to be grumbled at. It must be remembered that in almost every other country in the world the history of carbide and acetylene has been marred by a considerable number of accidents, and that here such occurrences are very few.

Calcic carbide, naturally, having been made at a heat of 3500° Cent, is not a substance which is going to be upset by any ordinary temperature. No heat that you can bring to bear upon it has any effect, but it cannot stand water, and the moment you bring water or moisture to bear upon it it begins to decompose. The contact of water with calcic carbide results in double decomposition; the calcium takes the oxygen of the water to form lime; whilst the carbon of the carbide, and the hydrogen of the water, escape together as acetylene. Before the process of making calcic carbide in the electric furnace made acetylene one of the most easily formed of all the gases, one had an enormous amount of trouble in making it, and one had to work for a week or two in order to procure one or two litres of the gas; but having got calcic carbide and water the method of making acetylene gas is of the simplest possible description. I confess that when, in January, 1895, through the kindness of Sir H. T. Wood, I first had the opportunity of introducing acetylene to an English audience, I thought I had exhausted the subject of generation by showing that I could make the gas in some half dozen different ways, but I find that since then other methods—differing from each other in slight particulars—are constantly being patented. Here is an experiment which I first showed at the Society of Arts: I had a generator which was entirely my own, and which I thought was of remarkable beauty; it consisted of a little perforated zinc cage capable of holding an ounce of calcic carbide; and on charging that cage, and plunging it into a glass cylinder filled with water, one had the satisfaction of seeing the gas generated, bringing the holder up, and also of seeing the lime stream down into the water below; having got the holder sufficiently filled with gas, a light could be applied to a burner at the top, and I still think that is a most effective generator, and certainly a very simple one. I also showed at the Society of Arts a modification of that apparatus, in which there was a reservoir to contain the carbide upon which the water was allowed to drip; and when I had shown this and one or two other modifications I thought that the subject of generation was done with, but as I have said I was mistaken.

The various forms of generator which have been proposed may be reduced to three distinct types, as follows:—

(1) A class in which water is made to drip upon the carbide. These generators nearly all consist of an iron retort with a lid which clamps on gas-tight; into this is put a metal tray containing carbide, and above is a tube bent along the length of the tray and bored with holes, into which the water goes and from which it drips upon the carbide; the acetylene comes off and escapes to a small holder placed to receive it, and the lime left behind swells up and fills the interior of the tray, which can be taken out and emptied.

(2) The second class may really be divided into two types: (*a*) A generator of excellent construction, in which the carbide, instead of being put into one tray at the bottom of a horizontal retort, is put into a cage in trays one above another in a vertical retort, and the water rises slowly up from below, a cistern being placed at a slight elevation; as the water comes in contact with the carbide, the latter is decomposed and the acetylene goes off from a cock at the top to a holder. That is a very good form indeed. (*b*) is exactly the same form as the cylinder and bell-jar that I have here, and consists of a floating bell-jar, and a cylinder containing the carbide in trays; the great trouble with this class is that there is always an enormous amount of heat evolved in the carbide itself.

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(3) The third class is that in which the carbide is dropped into the water, and there is not the slightest doubt that from a scientific point of view that is the true form of generator. On the Continent most generators are of this class. It has drawbacks, however, and the yield of gas from the carbide is often not so great as with other forms. There is simply a generator with a considerable volume of water in it, and a shoot down which the carbide is thrown; the carbide comes out on to a tray, and the acetylene comes off from it and passes away to the gasholder.

All these generators have to be very carefully manufactured in order that they may be absolutely safe. Some of them are very near absolute safety, others are very far from being safe, the great drawback being the heat generated while the water is acting on the calcic carbide. In the drip generator the carbide is always in excess during the first part of the operation, and a considerable amount of heat is generated. The heat generated when the water acts upon the carbide is often very intense; I have many times seen the mass of carbide red-hot, simply by the action of the water upon it, and it is manifest that in any generator in which there is a possibility of any large amount of heat being generated, you have a factor which must be got over. Undue heating in a generator is one of the things which must be avoided. Where there is undue heat, the acetylene gets converted into benzene, naphthalene, and other compounds, many of which have liquid and solid characteristics, and none of which have a lighting power, equivalent to acetylene itself, and they moreover reduce the volume of acetylene given off; and, worse than all, the burners are very seriously acted on, begin to smoke, and become carbonised.

There is one way in which you can always tell a good generator. If you have a generator for making acetylene, and you have any doubts as to its performance, take a small piece of the sample of carbide that you are using with it, put that piece of carbide into water in a tumbler, and look at the colour of the residue which you get left; if the residue is white, or if with the white lime there are merely a few specks of black undecomposed carbon, there is very little to grumble at. Then use the same carbide in the generator, and when the generation of acetylene is finished examine the residual lime, and you will find out whether the generator has been misbehaving itself. Here is a sample of lime from a generator which has been working well: it is quite white; on the other hand, here is a sample which has a distinct snuff-colour, due to the fact that during the decomposition of the calcic carbide far too high a temperature was evolved. When the residue is of a greyish colour, due to the mixture of white lime and black carbon, the temperature has been over 780° Cent. above the particular temperature at which acetylene is decomposed into carbon and into hydrogen, and where that is the case there has been gross overheating. Wherever over-heating of any kind takes place you are losing acetylene, not getting the proper volume from the carbide, choking the burners, and getting a gas that does not possess the proper illuminating power owing to admixture with hydrogen.

When acetylene was first made it was made from carbide, which was manufactured without any very deep knowledge of the subject, and wherever carbide works were established, they used the lime and they used that form of carbon which could be most cheaply obtained on the spot, and there was no very keen idea of the enormous importance of the purity of the original materials. Now, with our present knowledge of calcic carbide, one sees that it is absolutely essential to get the very purest coke and lime for the manufacture of carbide, because if there are impurities present, they become practically concentrated in the carbide made from the material, and show themselves in the acetylene itself. Almost any commercial form of carbon, even metallurgical coke, contains a considerable percentage of ash, from 4 to 14 per cent.; and if you notice that ash you will find that it consists of lime, magnesia, alumina, iron, and traces of sulphur and phosphorus; and when such coke is used for making carbide those substances find their way into it and become concentrated. Amongst the compounds so formed, the phosphorus present in the ash of the coke, and also in the lime, forms phosphide of calcium, which, when the carbide of calcium is decomposed in water, gives off minute traces of phosphuretted hydrogen. I investigated two samples of carbide which contained sufficient phosphide of calcium to cause spontaneous ignition of the gas under certain conditions, but such cases were rare and have now disappeared. In the same way the sulphur in the ash of the coke and in the lime partly combines with alumina; if there is practically no alumina in the lime or coke ash the presence of the sulphur does not matter, because the sulphur then does no harm, but if there is alumina present the sulphide of aluminium will be formed, which breaks up in contact with the water and gives off sulphuretted hydrogen—which has a distinctive odour of its own. All this having been recognised, you find that at the present moment acetylene has become very much purer, but whilst we were getting the impure carbide we had distinct troubles. I do not think that sulphuretted hydrogen is altogether a drawback to the gas, for acetylene when quite pure has a pleasant ethereal odour which would not be so likely to attract attention in the case of a leakage. But the presence of these impurities, and the troubles which they brought about, made it manifest that it was necessary to purify acetylene gas, and during last year a great deal of work has been done in that direction. Sulphuretted hydrogen is a gas easily dealt with, but it is not so easy to deal with phosphuretted hydrogen. At the present moment there are only about three substances which satisfactorily take it out. One is the method used by Dr. Frank, in which the acetylene gas is passed through an acidulated solution of cuprous chloride, which takes up both phosphuretted and sulphuretted hydrogen. Then there is the Ullmann's process of purification, in which the acetylene is passed through solutions of chromic acid; but that has not been proved to be as good as the other. And there are also processes, like Thorn and Hoddle's, in which the acetylene is passed through purifiers containing bleaching powder, which has the power of oxidysing the impurities; but, at the same time, that is not quite as good as the Frank process, which is, I think, the best.

Having got the acetylene fairly pure, the next point is the burning of the gas, so as to get the maximum illuminating power out of it. That has been a source of very great trouble. When acetylene was first introduced I had to determine its illuminating power, and I found that with a pressure up to about 4 inches it could be burned in a OO Bray burner and gave a magnificent flame, the light being equivalent to about 240 candles for 5 cubic feet per hour, and that figure has been adopted by every acetylene gas exploiter since. But a burner of that size brings the gas too near its smoking point, and you are obliged to use a burner not consuming more than one cubic foot per hour; and one knows that you must not

take the light for a big consumption and divide it down as you make the consumption smaller, for the smaller the burner the greater does the waste become. The biggest burner that can be satisfactorily used with acetylene is a one cubic foot burner, and that will give on an average 30 candles for the one cubic foot per hour. When the gas first began to look like a commercial possibility, I made a burner which I thought was going to overcome all the trouble; it was really a very small Bray burner in which the two little holes were at a much more acute angle than usual, and with that I got about 36 candles for one cubic foot per hour, but although the light was very beautiful, it was easily affected by draught, and at the end of 200 or 300 hours the burner began to carbonise and the flame began to smoke. Six or seven months after I made that burner, a new one was introduced in France, in which instead of the union jet and two little holes, the tubes were brought up separately and the two jets were made a little distance apart, impinging upon each other so as to make a "butterfly" flame; but still, after 300 or 400 hours this burner was as bad as the other. The carbonising gives rise to the beginning of the smoking, and afterwards ruins the burner, owing to the wonderful catalytic power which carbon has of decomposing the acetylene. As soon as that point was realised, Bullier, and later Naphey, introduced the idea of bringing air in with the flame, not, as in the Bunsen burner, by making a mixture, but by making the acetylene—as it passed out of the two jets to coalesce to form the butterfly flame—suck round it a tube of air which should prevent the acetylene touching the steatite. This burner gave a very good flame of great brightness. It was a great improvement, and to a large extent did away with the trouble; but one point was overlooked. Half the difficulty in the burners arises, not from the acetylene, but from the products which are in it in consequence of the improper heating in the generator. If hydro-carbons are formed by the heating of acetylene, you have them as benzine or some other liquid hydro-carbon, and they are held up as vapours in the gas; and that vapour flows, because it is really in a vesicular form; and one knows from various researches that these little vesicles can be taken through condensers and scrubbers of almost any description unless the scrubber is of such a form that there is great surface friction and a rush of gas which bursts them. Where there is tar vapour or benzine vapour, the scrubbing action of the steatite tip scrubs it out, the steatite becomes soaked with the liquid, and the heat carbonises it.

With these burners acetylene can be burned satisfactorily for 400 or 500 hours, or, if purified, for nearly 1,000 hours, without any trouble with the burner itself, and that has practically removed one of the last difficulties with regard to acetylene.

On the Continent, acetylene is going ahead far more than in this country: in Hungary, for instance, whole villages and small towns are lighted with acetylene gas, and large installations are far more common than they are here. Moreover, it is being used at the present time to a considerable extent for photographic work, which I imagine is what interests you more than any other. When you come to compare the light of acetylene gas with that given by other sources of light, you find that it is remarkable for its pure whiteness. Some German work has been done in attempting to measure the amount of the different rays of the spectrum in various forms of light, and it has been pointed out that in the arc light you have a light which is extremely rich in actinic rays, and extremely rich in the blue rays and in a fair number of the green. But when you come to the Welsbach mantle you find it is not nearly as rich as you would expect in the chemical rays, Where the Welsbach mantle gives its great result to the eye is in its richness in green rays, for it has a considerable percentage of green rays over and above the amount present in the solar spectrum, *pro rata;* it is that which gives it its glare and hardness, but that glare and hardness which is so marked in the Welsbach mantle is not a characteristic which is good for photographic work. Further, it is not nearly as rich in blue as one would expect. Acetylene is poorer in green than the light of the sun, but richer in the blue rays than sunlight itself; I do not include the ultra-violet rays, but in the blue rays and the visible violet rays acetylene is extremely rich, and for that reason you expect, *a priori*, that it would be an exceedingly good light for photography, and so it has proved itself to be. With proper distribution of the light extremely good photographs can be taken. In England it has been used in clusters for photographic work, and with metallic reflectors; that method, however, has abroad been found to give hard results, and the system which is largely used there consists in having say three stands of five burners each, with a movable screen of glazed white paper as a reflector; in front of each cluster is placed a screen of extremely thin tissue or transparent paper. It is usual to employ altogether from ten to fifteen lights, and with transparent screens in front of them an exposure of 10 or 12 seconds is necessary; the exposure can be very much reduced if the light is used without the screens, but then the artistic effect of the photograph is found to suffer.

Acetylene, too, is of considerable value for photographic printing, for which purpose it is not expensive. From an ordinary negative of a yellow tint a fully exposed print can be made in about 80 minutes, with a small acetylene flame about 6 inches distant, and the time may be reduced by adopting the method of development after partial printing. For studio work, with carbide at sixpence per pound, a dozen or more negatives could be made at a cost of about sixpence for light, and for printing the expense would be something like one-third of a penny per print. The more one considers the photographic aspect of acetylene, the more one feels that the time will come when acetylene will supply an efficient substitute for the natural sunlight that one is rather short of at certain periods of the year.—*The Photographic Journal.*

Purple Tones on P. O. P.

By John A. Hodges, F. R. P. S.

It is a little difficult to understand why sulphocyanide of ammonium should be so generally recommended and so largely used for the toning of P. O. P. It is an objectionable salt to employ, both from a chemical and physical point of view. There is always the risk of getting double tones, and the salt is of a very poisonous nature. In selecting a formula for a toning bath one has, of course, to consider the particular tone that it is desired to produce, and those who prefer a warm chocolate brown, no doubt find they can produce that colour with the sulphocyanide bath. If, however, the richer and darker tones of purple and purple-black are required, there are other baths that will yield such colours with greater ease and certainty, and without running any risk of getting

double tones. One of the best and simplest of baths, and one which yields very fine tones, ranging from chocolate to purple, and even black, is the phosphate bath. It is a particularly easy one to work with, and the wonder is that it is not more generally employed. It will be found to suit most makes of P. O. P., and gives very beautiful results. Like the sulphocyanide bath, it will not keep long after being made up, and should be used as soon as it is mixed. The formula is as follows:—

Phosphate of soda	20 gr.
Boiling water	10 oz.
When cold, add gold chloride	1 gr.

Stir well, and the bath is ready for use. It will probably present a milky appearance, but this is of no consequence, and it is not necessary to filter.

The following point should be carefully attended to:—Wash the prints, face downwards, in several changes of water, changing the water rapidly, and keeping the prints in motion by turning them over and over. Markings and a general degradation of the whites are often caused by carelessness in the first washing—the prints are put into the washing water two or three at a time, and for a few moments are only partially wetted. This must be avoided by putting them in singly and thoroughly immersing each one, turning it over and over so as to get the entire surface at once uniformly wetted. This takes no time, and avoids waste.

A sufficient quantity of toning bath should always be used to well cover the prints, and they must be kept in motion, both by turning them over and over and by gently rocking the dish. This plan will effectually prevent uneven toning. Never attempt to tone too many prints at once. You will not save time by doing so, but you will spoil some of your prints. The phosphate bath is a quick toner, and if you want to keep your prints warm, you must take care to remove them before they pass into the purple stage and whilst they still look reddish. For warm tones, the bath will be easier to work with if further diluted with 5 oz. of water, keeping to the same proportions of phosphate and gold. But the phosphate bath is more suited for those rich purple-black tones which many seem to have so much trouble in producing, and if decidedly warm tones are desired, the acetate bath or the sulphocyanide bath should be employed. Those who have not used the phosphate bath before will find that it is necessary to print a little more deeply than would be necessary with the sulphocyanide bath, as there is a slightly greater reducing action during toning; indeed, if very dark, cold tones, approaching to black, are required, the proofs must be considerably overprinted. When the latter tones are desired, the bath should not be diluted, and the proportion of gold may be increased with advantage up to two grains for the quantity of solution given. So working, black tones resembling platinum in colour, but combined with the beautiful depth of shadow that so distinguishes P. O. P. from other printing processes, can be obtained. The prints are fixed in the usual manner, but the hypo bath should be neutral, and not too strong.

The final washing should be done quickly and thoroughly, prolonged soaking in still water is ineffectual in removing the hypo, and has a tendency to spoil the tone of the prints, especially when they have been developed to a cold tone. One hour's washing in running water will more thoroughly remove the hypo than several hours' prolonged soaking. If a properly constructed washing apparatus is not available, place the prints, a few at a time, after removal from the fixing bath, in a deep dish, into which water fron the top is allowed to run gently, turn the prints over and over, changing the water rapidly, so as to remove the hypo as soon as possible. They should then be transferred to a large, deep bowl—a bread-pan answers capitally—into which water is allowed to run by a piece of rubber tube connected with the tap. Over the lower end of the rubber tube a piece of composition pipe, about 6 or 8 in. long, is slipped. The free end of the compo pipe should be closed by beating together with a hammer, and a dozen or so small hales should be bored with a fine bradawl in the tube itself. When the tap is turned on, the force of the water issuing from the small holes keep the prints in gentle motion; and to prevent them washing out of the bowl with the overflow water, a piece of fine netting should be stretched across the top.—*The Amateur Photographer.*

Portraiture.

By W. Crooke.

Portraiture, you will grant, is by far the most difficult branch of our art. Take any other subject as a subject for the camera, and with sufficient technical knowledge the obstacles are by no means insurmountable; but what else in creation can compare with the human countenance for mutability and variety of change? Health, temper, frame of mind, or dress are but a few of the contending difficulties which meet the professional photographer, for to combine a pleasing portrait, with a true likeness must be our end and aim. As our subjects are seldom perfect, it is necessary to keep constantly before our mental vision a distinctly ideal form, so that when deformity presents itself, or even a single deviation from our idea of perfection in the human form divine, we may be able to discreetly modify the defect by the various means at our disposal without entirely obliterating any point which may tend to spoil the individuality of our sitter, and so attempt a deceit which is a distinct violation of the rules of true portraiture.

I think that most of us are cognizant how very unmerciful photography at times is apt to be; but if we can only bring our artistic knowledge to bear upon the difficulty, it is often more easily solved than we should imagine.

Shall we look for a few moments at the different points of the face, remarking, first of all, on the mouth?

This is perhaps the feature, and especially in ladies, which requires the most careful observation, and on no account should the mind of the subject be influenced to the consideration of it, or a total destruction of the natural lines will probably be the result. Much may be learned from a cursory conversation with a sitter, during which an opportunity is gained of observing the delineation of the mouth when in animation or repose. In many instances the youthful female mouth may be treated with the lips apart, but in this case a full illumination of the opening is necessary, as the tendency in photography is to obtain too dense a shadow, thereby destroying the delicate transparency that we admire in nature. Children's mouths are a fascinating study, with their beautiful, soft, mobile lines, full of a sweetness and repose seldom or ever to be found out of childhood. Unfortunately for photographers, however, this ideal expression is not the one

most generally appreciated by the loving mother or auntie who may accompany the juvenile sitter, and a grin which distorts the bow-like mouth into a grin extending from ear to ear is more likely to meet with their favor. With advancing years the susceptibility of the mouth to change is more apparent than in any other feature. The development of characteristics, the results of certain habits, the circumstances of joy or sorrow, all tend to leave an indelible mark upon this most tell-tale feature, leaving compression of lips, and destroying with lines and twists the delicate mobility of youth. All this calls for our careful consideration in portraiture, and demands our utmost skill in dealing with it. For instance, a twist may often be modified by a judicious pose of the head, and I shall make a reference later on to the treatment of lines.

And now to pass on to the most attractive feature of the human visage, which is indisputably the eye.

Again I must revert to the child. Here we find the eye abnormally large, a fact accounted for by the growth of that organ not being in accordance with the other features. Both in children and adults this charming feature cannot receive too much attention, for here you have to deal with the "windows of the soul." All our most interesting subjects have fine eyes. While on this subject it is useful to remember that a certain latitude is allowed in the higher art of painting with regard to the size of the eye. But this is not a concession that we can apply to the photographic art. There are, however, certain conditions in our practice which tend to an opposite result, unless we are on our guard, among which I may mention the indiscriminate use of light as being the most guilty factor, and it should always be borne in mind that too much light has the effect of dwarfing the eye. Stray lights are also detrimental, and are frequently caused by the mischievous use of white reflectors placed in too close proximity to the sitter. The seat of sweet feminine character is in the outer corner of the eye, and more particularly on the lower lid. Our greatest portrait painters fully recognized the importance of this most telling feature, for when receiving or parting with their subjects the eye was always the first and last to attract their attention.

We have now dealt with the two leading points of the face wherein mainly rests the expression, and the treatment of the other features—viz., the nose, chin, and ears—must depend on the judicious points of vantage which can only be selected by the photographer after a study of the contour of his sitter's head. The ugliness of a face may be decidedly modified by choosing either full, three-quarter, or side view, and the calling into requisition of the charm of light and the mystery of shadow, remembering that the naked truth is deceitful.

But one of the photographer's most serious barriers in the way of artistic effect is the constant contending with ugly fashions, the sleeve not in frequently proving a most troublesome point, its shape and size influencing in a large degree the scale of the head. The large, full sleeve, which, I regret to say, has just become a thing of the past, was in my opinion admirably adapted for the square bust portrait, although it certainly had the disadvantage of emphasizing the defects in short, stout figures when full-length pictures were required. The present style of sleeve calls for special treatment, and only in exceptional cases is becoming. The arm usually emerges from a tuft of satin or other stiff material, about the size of a breakfast roll, and in bust portraits the short piece of arm which appears between the fulness of the sleeve and the lower margin of the picture seldom looks well.

But these and other vagaries of fashion are good tests for the photographer's powers of composition.

Children make delightful pictures, their simplicity and serene unconsciousness being qualities which lend themselves readily to the painter's brush, or the less pretentious camera; but to do them justice in either painting or photography, needs a special study and love of infantile life. Reynolds was a great lover of children, otherwise our eyes could never have feasted on such art-treasures as Lady Smith and her children, and many others.

His child models were, however, invariably well dressed, and here, again, as in adults, the photographer is met with a blank wall of opposition. A new stiff or starched dress is a garment usually brought into requisition for the important occasion, when an old, soiled, or flimsy frock would doubtless have been the very thing cloud the unhappy photographer have made his own selection. In the case of very young children, the neck and shoulders should always appear, although there is a danger of making the head abnormally large, unless discrimination is used in allowing the dress to fall below the shoulders, thereby giving the appearance of greater width.

If the usual short frock is used, nothing is prettier for a child than a full-length figure standing alone, especially if taken from a low elevation, which gives the little subject dignity, and shows to advantage the limbs, which are always interesting; but this is doubtless the most difficult portrait to secure with any amount of success. The charm of our daily work with children is the constant anticipation of what may next reveal itself.

I will conclude with a few words as to the practice of retouching. As in landscape work, so in portraiture, we get too much detail; but while not for one moment losing sight of the fact that all the predominant darks in the face are conducive to likeness, yet the excessive details which make their appearance on the intervening spaces can bear modification, as such detail is only troublesome to the eye and not of service as regards the likeness; but when the retoucher directs his energies to the wholesale removal of the darks, then the likeness at once begins to suffer. You remember my reference to the seat of sweetness in the female eye, and if the fulness under it is removed, with it goes all the poetry.—*Wilson's Photographic Magazine.*

Retouching.

BY REDMOND BARRETT.

THERE are many who cannot or will not recognise the legitimacy of this art in its association with the science of photography. I can scarcely think this fair, as, however much amateur photography may be independent of retouching, professional portrait photography is commercially very much dependent upon it for success. I do not wish to insist upon retouching being the chief point, but I do insist that it is an essential one, in the production of successful portraiture. The retoucher should work in closest sympathy with the operator, and help him to carry out the artistic notion to which he first gives existence in the shape of a negative. The retoucher

necessarily comes second, as the negative in the first instance must be the operator's production. I consider retouching a natural offspring of the simple process of development, for it is in a manner a process which enables the operator to accomplish the very difficult task of intensifying the negative in certain minute parts where intensification is necessary—an operation which would be quite impossible by ordinary chemical treatment in the usual way. The process first adopted for carrying out retouching was a very rough and ready one. The operator in most cases usually worked out the blemishes with water-colour; some manipulators using one tint and some another. The very earliest colour used for this purpose was, I believe, blue; then followed neutral tint, Payne's grey, and kindred tints, until finally the lead pencil took a firm hold to the complete exclusion of all other means. Its working was easier and more convenient, to say nothing of its greater reliability, the actinic properties of the deposit being more easily and justly appreciable than those of any vehicle employed in any of the other methods formerly in use.

Retouching was first introduced in the old wet-plate days, and, to a few of the more advanced and up to-date workers in photography about the middle of the century, proved the means by which big positions in the profession were secured, as well as enabling them to considerably inflate their banking accounts. In those days it was the custom to stipple out the blemishes with blue or neutral tint, as I have already stated, and thus to build up the defective parts of the image so as to produce a more pleasing picture than would otherwise be obtainable from the untouched negative. Of course, there was but small scope for variety of method or treatment in the working of this style, as the most natural and easy means of applying a flowing colour to a plate so highly sensitive to moisture would be to stipple the same on with a moderately dry brush. With the adoption of the lead pencil for retouching, however, all this was very much altered. There was imparted a greater variety of possibilities, to be limited ultimately only by the artistic feeling of the artist carrying out the work. This limitation, I am sorry to say, is but very ill-defined, and seems to be shifted about in the most reckless manner to suit the temperament of the artist, or of the photographer by whom he is employed, or the whim of the customer. It is much to be desired that a definite limitation should be fixed, and a positive theory adopted from this stand-point as to what good retouching really means.

I regret that there seems to be such a divided opinion as to what is and what is not the correct way to carry out this interesting work, as also to what extent that work may sensibly and artistically be carried. As I say, limitation is but very ill-defined, and to add to the general confusion the various writers on the subject have laid down divers and contradictory methods as being the only correct ones to be used in the working. The "cross-hatch," the "dot and tail," and the system of touches resembling the letter "S," are all set down as the best or only stroke or touch which can produce artistic retouching. These touches are all very good and nice in their way, and will give very charming and pretty effects; but I cannot see that the results are quite artistic, nor are they at all natural or calculated to produce sound portraiture. I have always held that retouching is not such a poor art as to be run on such narrow lines; and I have always endeavoured to uphold that there should be no such thing as a regulation touch, but that on the contrary there should be perfect freedom in the use of the pencil in taking out or modifying a blemish or altering an expression. I always desire to believe that there is more virtue in the intention of the artist than in any peculiar means he may use to express it. Such touches may be very well now and again, when they suit the blemishes, but I think it a folly to lay down a regulation touch as the sole and only manner in which artistic work should be carried out unless they order the blemishes, etc., to be made to suit them. If portrait painters adopted such a method as this what a fine show our National Portrait Gallery would present (?). We, however humbly, should follow the example of our betters, even if at a very respectful distance,—it will always do us good. I fail to see that any artistic feeling is possible in "regulation" work, except it be accidental, but assuredly there is no commonsense. I would submit this point for your consideration. If a blemish be of some particular shape, why should we cover it with a tissue of marks of a different shape? The shape and quality of a touch should be entirely governed by the shape and quality of the blemish; neither should our touch however free from mannerism be too positive and defined, as this will tend to destroy the quality of the *skin* (as is the case in the mechanical touches before referred to), and I may say that in my humble opinion the skin is a very important factor in any portrait. Regulation touches will give you what is called *texture*, or grain, but they will not give *skin*; and the point to be considered is, do we prefer texture, or do we prefer skin? In the prevailing methods of working negatives little attention, if any, is paid to this matter—no thought, no brains. All heads are touched in the same way; strong men, weak men, old ladies and young ones, and even children, are all treated alike—there is only one skin on top and all must have it, be it natural or not. Now, this system of smoothing—for it is nothing else—is so generally adopted that there is no very distinctive difference between the work turned out by our first-class London houses, at enormous prices, and the moderate-priced work of our falsely designated "second-rate" country photographers. Is it wise that this should be so?

Let us examine this smoothing-up process for a moment, and see what a foolish thing it really is. Delicate detail, fine modelling, artistic light and shade, are all difficult qualities for the operator to secure, and yet the retoucher is allowed to quietly sweep them away, and for what purpose? simply to gain that polished surface which is so dear to him, and which with so many passes as the acme of good retouching. See if there be any life in the faces: are they not cold, hard and in most instances expressionless and uninteresting? I think, however, you will find that there are many who yet consider them very good work, notwithstanding the fact that nothing short of a most impressionable imagination will be able to trace in them the least resemblance to the originals. Of course, we can always assure ourselves that it is a certain portrait by examining the watch-chain, the neck-tie, or some other article by which the identity can be established and so the face can be done without. But is this as it should be? I think it may safely be said that ladies are more susceptible to undue flattery than are men. That being conceded, it is only fair to say that when men are open to flattery they will go a considerable distance to secure a record; in fact, I know examples that would make us all blush for our sex. In my own experience the complete alteration of a nose is but an ordinary affair, but I have also had to improve the symmetry of a gentleman's back, when increasing weight

and years had somewhat marred his former beauty. But we will pass these over as the exceptions that prove how sensible we ourselves would be? What we ought really to consider is, should we not be more judicious in our flattery, and use greater skill and thought in carrying it out? I feel sure that if a better standard of opinion were established on this point an all round good would result, alike to the retoucher, the photographer, and the general public. One would not so often see, and hear it said (unfortunately with a very large degree of justice) that the best likeness of Mr. or Mrs. So-and-so was taken by an amateur friend, in his back garden--the only apparent reason being that, although the portrait is much worse from a purely photographic point than those taken by professionals, it has not been retouched. Examples of this kind crop up almost daily; I find very often that, when a death occurs, in nine out of ten cases amateur photographs are sent to me for copying or enlargement in preference to the ordinary studio picture, on the ground that "it is such a good likeness," although the negative is in all other respects a very bad one. Experience—and I have had a fair share of it—has always been full of object lessons, and I have always tried to gain instruction from them as I have struggled along, and I am just as open and willing to learn some point this evening as I was twenty-five or more years ago. Believe me, we should all live and learn, and I hope it may be long before any of us cease to do either. The moment we cease to learn and hope to improve, retrogression sets in, and we may rest assured that conceit, that most objectionable of qualities, will soon take firm hold of the victim, and ruin his or her future.

If my objections to the fallacy of regulation methods of retouching as popularly laid down, be true as regards their application to professional portraiture, how much more so must they be when applied to amateur work and to other branches of the art-science? Amateur work, taken under all conditions of light and in the face of many difficulties, should never be treated by the retoucher as within the same narrow limits which may be more or less sufficient for professional studio work, a fact which I have no doubt you have all observed.

How much more truly must all this apply when we attack the other branches of photography, such as landscape and architectural work. Retouching can be very largely employed in these interesting branches, and here again the healthy and untrammelled use of one's brains comes in with even greater advantage. To remove blemishes is but an item in the work we do; often it is possible to add an effect of light or shade which is not in the negative, or to emphasise an effect which although indicated is not powerful enough to assert itself. It is only during the past few years that I have been called upon to treat architectural and such kindred subjects. At first I scarcely knew what to do with them, unless I found an unhealthy lot of blemishes staring me in the face, but I at once reflected and realized that the subject was well worth studying up. I therefore started buying engravings, of which I have now many hundreds, and from them learned how to make a picture of interest of a photograph almost devoid of beauty—with ample technical detail, but no artistic balance of light and shade. With engravings before one, taken from the best points of view—inside and out—of the various edifices noted for their beauty and grandeur, one can find ample food for reflection and a chance for some good work. The originals of these engravings were not only sketched from the best points of view, but they were finished by such giants in the handling of light and shade as William Henry Bartlet, Allom, Roberts and Prout, and they are invested with all the beauties of that artistic balance of which these artists were such rare masters. The photographs one has to treat may probably have been taken from the same or nearly the same, stand-point, but how about the artistic effects of light and shade? The enthusiastic and artistic photographer must have full credit both for knowledge and artistic feeling, but be these qualities ever so great he cannot command the light to his wishes and can only take the view as the light will let him. This is no fault of his, for struggle as he may he cannot get what he originally hoped for, and must be content with whatever image he may secure on his plate Now is the time when we as retouchers can second his efforts and help him to procure those effects which he had hoped for but found impossible to secure. By washes of colour, papering the back of the negative, stumping in lights, etc., etc., we help him to score a success. This should really be considered as part of our art, and the student should pursue it still further for instruction, as I do, by making a study or a hobby of restoring engravings and mezzotints. I promise you, you will find such work most enjoyable, as well as instructive. Working in this way one naturally trains the eye until one acquires a most sensitive feeling for artistic beauty which will be invaluable to us, to say nothing whatever of the attendant pleasures of the occupation.

I have often wondered why amateurs, and especially ladies, of artistic taste, have not gone in for retouching more seriously than they have done. I cannot think that it is owing to the little difficulties which beset the path of the beginner No, I think it is more traceable to the fact that the teachings on this interesting subject are such as to shut out the artistic opportunities which alone would induce the better class of amateurs to undertake the trouble of learning. I know cases of ladies who have so-called beautiful photographs, and who have yet declared that they had not a likeness of themselves which they would leave to their family. There is a lot of money waiting for the amateur or professional photographer who would supply this want—a good photograph and a good likeness. Another question worth pondering over is: Can a bad likeness be looked upon as a good photograph? A discussion on this point might result in a real benefit to our photographic portraiture as represented by the photography of the day.

At the conclusion of his paper, Mr. Barrett invited the members present to submit prints to him for friendly criticism, with a view to some understanding being arrived at upon the question as to what is good retouching, but there being no response, he continued,—

Let us take as examples the portraits of the fathers of photography, upon the walls of this room. The majority of them were no doubt taken in the days of more or less untouched negatives, but I do not think the Society would care to have them replaced by photographs in the present style. Surely a medium between present-day work and the old style would be a much safer line to work upon than the one plan of continual smoothing. Some years ago I saw a 15 × 12 group of a lady and gentleman and a child, taken by a leading photographer, all the faces having the same touch; I did not consider that good—certainly it was not thoughtful, for there should have been differences in the texture of all three. I have found that the negative itself holds a certain

impression of the real skin; *i. e.*, that there is the texture of real skin in the negative, if we in retouching do not make our touches so vivid and aggressive as to destroy it. I can retouch a good many large heads in a day, but I could not do so if I did not make use or the negative itself: and where the negative prints fairly white I do not encumber it with much retouching. I think, too, that in retouching a great deal of attention should be given to the improvement of expression. It very frequently happens that a sitter gets an unfortunate expression quite unlike that which is natural to him, but the slightest possible amount of work on the negative is sufficient to remove it and to produce a pleasant and natural likeness, and it can be done by any one who will take the trouble to think. The people who learn retouching are not sufficiently taught the importance of training themselves to think; they are taught to *do*, but there is really very little to do—most of it is *thinking*—thinking how very little pencil will make a successful picture.

The President agreed that the great objection to modern retouching arose from the fact that so little thought was devoted to the work. In using a wax head for making experiments in lighting he got something approximating to the appearance of the highly retouched portraits exposed for sale in shop window—a result quite unlike skin and devoid of expression. Another cause of the unsatisfactory nature of retouched photographs was that the retoucher gave his idea of what the face ought to be, rather than what it actually was, and this was almost unavoidable unless he had an opportunity of studying the original.

Mr. Barrett continued, answering one or two questions which were interjected in the course of his remarks. The beauty of every head consists in its expression, and more success is gained by attention to that detail than by working up what is called a beautiful finish. I think ladies would be much better pleased with their photographs if their expression were properly rendered—with, perhaps, a reasonable amount of flattery—than with portraits in which everything is carefully smoothed out for the sake of "finish." Youth can be partially restored without burlesquing the original; there are certain faces that will admit of flattery without losing the likeness, but there are others which will not stand it without becoming grotesque and unpleasant to those who know the sitter. The medium which should be aimed at is the point which will produce a successful portrait and at the same time a pleasing likeness; it can only be arrived at by limiting the amount of work as much as possible, for the more pencil you put on the negative the more likely are you to lose the likeness. The degree of hardness of the pencil employed depends largely upon the peculiar touch of the user; personally I prefer a No. 3 lead, a very safe pencil with which almost anything can be done. With a hard pencil there is a tendency to increase the quantity of work, and consequently to overdo it. With a No. 4 it will perhaps be necessary to make two strokes to produce the effect of one stroke with No. 3, and with No. 5 three or four strokes may be required, and that is dangerous; but one delicate touch with No. 3 will give the full amount of deposit and obviate the risk of over-working. A good method is always to take out the major blemishes first. It will be found that the blemishes occur, as it were, in series or rows; take out the glaring ones first, and then the second row will appear to be pretty bad—take those out next, and you will find that very little remains to be done. Do not continue touching and touching the negative until it will take no more lead, but be satisfied when the blemishes are gone. If the negative is to be printed on a high surfaced paper the touch should be finer and softer than when platinum prints are required; I can retouch a large head for artistic effect in platinum printing in a very short space of time but quite double would be necessary for silver printing. Freckles present no difficulty, and may be looked upon as the front row of blemishes, and as a guide for the rest of the work. The object in removing a blemish should be to destroy its shape, not to fill it up, which its ruinous to the photograph, because by filling it up you produce white and thereby loss of colour, a quality most essential to a good picture. Where the pencil touches the negative for the first time the deposit should be greatest, and from that point to the finish of the touch, it should become lighter, so that the end of the touch is simply the little bit that knits the work together. The severity of the expression of a man's face can always be softened, but the retoucher need not go so far as to put a laugh on the face of a man who never smiles. Ability and beauty do not always go together, and the retoucher should not take the brains out of a man of great ability, leaving him nothing to show his claims to be above the average. Where a man is the possessor of considerable ability there are always indications of it in his face; yet he may have no pretensions whatever to beauty. Now in trying to make such a man beautiful or even good-looking, we will surely deprive him of his undoubted ability, and fail in producing a good portrait. The late Mr. Gladstone was an example of what I mean: what would his portrait be without the wrinkles? Half the people who learn retouching are not taught to think; I invariably make my pupils *think* for the first six lessons, and then they can almost *do* for themselves. There never has been a portrait negative so perfect that a small amount of retouching will not improve it, and the great object should be to know when to leave off; nature has colour to help her, but photography has only black and white, and if a line is too harsh or too cold a very small amount of modification—as in the lines under the eyes—will often be of material assistance in reproducing the effect of nature upon the eye of the observer. The necessity for retouching arises primarily from the fact that the colour of the skin is made up of minute particles of different colours so blended that to our eyes they appear to be one colour natural to the skin, but in the photograph there is a differentiation between them which it is necessary to some extent to remove. The removal is done by means of retouching to the necessary extent, and that is not very far. A mistake is often made in retouching the shadow side of a face, making it appear full, perhaps, while the lighted side is thin and sunken; it should be remembered that the slightest touch on the shadow side has twice the importance it would have on the other side, and that all the well-indicated features should be kept. For publication work over-retouching is more acceptable, because people buy photographs of actresses and professional beauties simply because they are pretty, and not because they are good likenesses; but with well-known public men and men of learning and intellect flattery is ruinous, because we really want likeness of them and do not care whether the portraits are pretty or not. The question of retouching landscape and architectural photographs brings in some different considerations; I think the printing in of a sky or a foreground is quite justifiable,

(*To be continued.*)

COMPETITIONS.

(Open only to Members of the Society.)

HALF YEARLY ... Architecture.

RULES.

1. *Two Special Competitions shall be held, in each year, in addition to a monthly competition.*

2. *The Committee shall select the subjects for the Special Competitions, and notice of the selected subjects shall be announced in the Society's Journal in February and in July of each year. The subject for each monthly competition shall be selected two months in advance by the members present at the monthly meeting, and shall be notified in the next issue of the Society's Journal.*

3. *Pictures, &c., competing for Prizes at the Special Competitions must reach the Secretary by the last day of January and of May, and those competing at the monthly competitions must arrive in time to be shown at the monthly meeting.*

4. *Prizes will consist of Silver and of Bronze Medals, and of Certificates of Merit.*

5. *Not more than one Silver and one Bronze Medal shall be given at each Special Competition, and one Silver and one Bronze Medal may also be given at these competitions for excellence in copying, enlarging, lantern slides, or any other special branch of photography. One Silver and one Bronze Medal shall be awarded half-yearly to the exhibitors who obtain the highest and the next highest marks respectively at the monthly competitions. The number of Certificates of Merit granted at each competition is left to the discretion of the Judges.*

6. *A member may receive only one Silver and one Bronze Medal in the special, and one Silver and one Bronze Medal in the monthly, competitions, held during the same year; but should a member who has been adjudged a medal be disqualified under this rule from receiving it, he shall be given a Special Certificate instead, marked 1st or 2nd Prize.*

7. *A Special Committee of three members shall be appointed Judges by the General Committee to carry out, subject to these Rules, all arrangements connected with the competitions.*

8. *The Special Committee shall be appointed after the Annual General Meeting in January, and shall hold office for one year, and any vacancy occurring will be filled up by the General Committee.*

9. *The Special Committee shall decide upon the merits of the pictures, &c., sent in for competition, and their decision shall be final. The system of judging the monthly exhibits shall be by awarding marks, a record of which shall be kept by the Judges, the marks being totalled and the results declared half-yearly. For this purpose, only the three highest marks awarded at each competition to each competitor shall be recorded, but not the aggregate marks gained by each for a number of exhibits.*

10. *If any member of the Special Committee is a competitor, the General Committee shall appoint a non-competing member to act as Judge at that competition instead of the competing member.*

11. *No exhibit shall compete twice, but pictures, &c., already exhibited elsewhere, may be sent in for the competitions.*

12. *Lantern slides sent in for competition shall be in sets of six, and shall be judged upon the screen.*

13. *The Special Committee shall not award any Prizes or Certificates, unless they consider the exhibits to be worthy of such distinction.*

14. *Each competing exhibit shall be the entire work of the exhibitor, and when sent in shall be accompanied by a Certificate in the annexed form:—*

> *"The (1) Arranging, (2) Exposing, (3) Developing, (4) Retouching (if any), (5) Printing and (6) Trimming and Mounting were done by me without assistance."*
>
> ____________________________
>
> *Member, A. P. Socy. of Madras.*

15. *All pictures for the Special Competitions shall be mounted, and may, at the competitor's option, be framed but not glazed. Those for the monthly competitions need not be mounted, but should be trimmed.*

16. *Each competing picture should have a name or title, which should indicate the nature of the subject.*

17. *No competitor shall be allowed to send in more than six pictures to compete for any particular Prize, but the same member may compete in all branches specified in Rule 5.*

18. *The pictures gaining 1st and 2nd Prizes at the half-yearly competitions, and the best pictures sent for the monthly competitions, shall, when practicable, be reproduced in the Society's Journal.*

19. *To give up-country members an opportunity of seeing the competing pictures at the special competitions, the pictures shall be circulated to all members of the Society, not residing in Madras, who apply to see them. As this arrangement can only be carried out by the cordial co-operation of the members themselves, they are expected to forward the pictures without delay to the next member, and to send one of the accompanying post-cards to the Secretary, so that by this means the progress of the pictures may be traced.*

List of Members whose Dark Rooms are available for use by Members of the Madras Amateur Photographic Society.

T. P. S. NAGARATNAM, 47, Malayappen Street, Black Town.

E. MAENNIG, Buckingham House, Tranquebar.

J. CHOKANNA, AMILDAR, Bowringpet, Mysore State.

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NOTICES.

Members of the Madras Amateur Photographic Society are permitted to use this column free of charge for two insertions of each advertisement—all subsequent insertions of the same being chargeable at 2 annas a line. When an advertisement becomes liable to this charge, it will not be inserted unless a postal order or stamps to the value of the charge are previously sent, addressed to Graves, Cookson and Co., Scottish Press, Mount Road Branch, Madras. Advertisements received up to the 5th of each month will be inserted in the next issue of the Journal; those received after this date will be held over for the subsequent issue.

Subscribers, and others who are not regular dealers may make use of this column for advertisements by paying at the rate of 3 annas a line.

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N.B.—The Journal is issued on the 15th of each month, and is posted free to members of the Madras Amateur Photographic Society.

Entrance Fee, Rs. 5.—Annual Subscription *for Resident Members, Rs. 15; for Up-country Members, Rs. 12. Members joining after 30th June pay Half-year's Subscription.*

Candidates for Election—*should be proposed by one member and seconded by another; and they will be balloted for at the following meeting.*

Ordinary Meetings—*of the Society are held on the first Friday of each month at 6 p.m. and members are at liberty to introduce visitors.*

Letters to the Editor—*should be addressed care of Messrs. Graves, Cookson & Co., Scottish Press, Mount Road Branch, Madras.*

Letters to the Honorary Secretary—*should be addressed to S. Jackson, Esq., care of Messrs. Binny & Co., Madras.*

Letters to the Honorary Treasurer and Remittances—*should be addressed to S. Jackson, Esq., care of Messrs. Binny & Co., Madras.*

Communications regarding the issue of the Journal—*should be addressed to the Publishers.*